

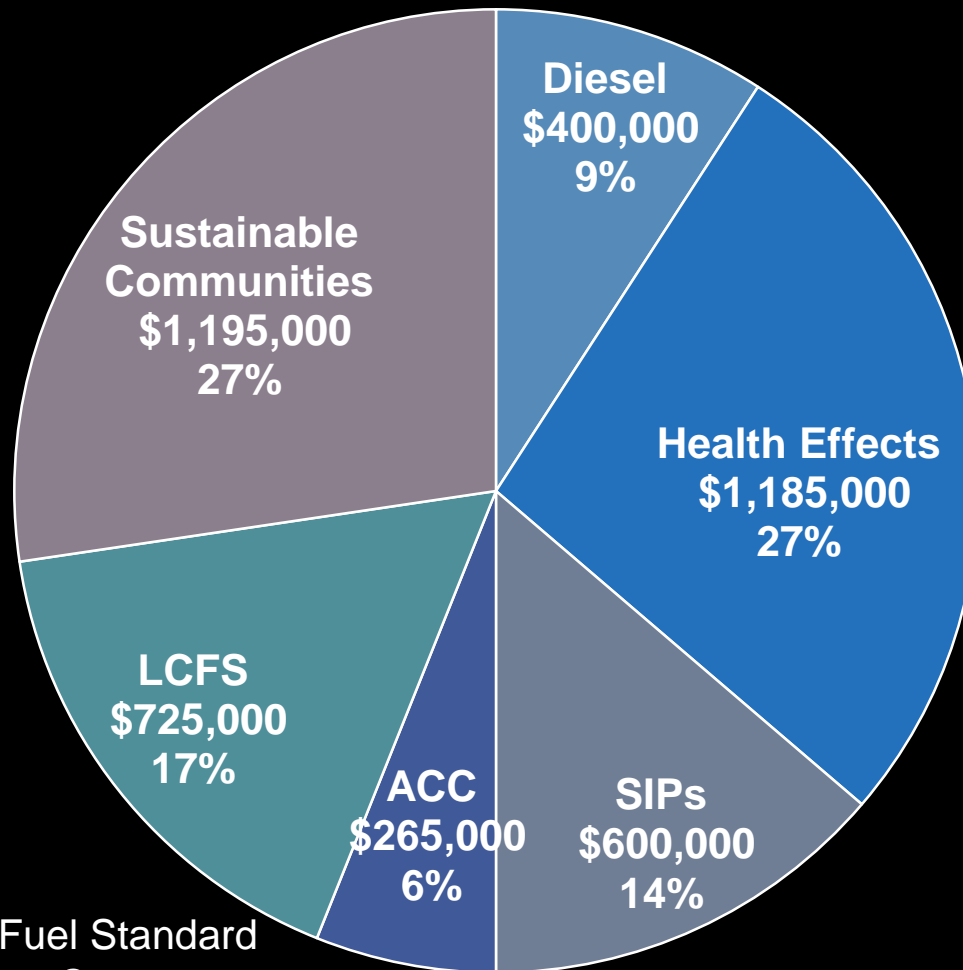
Proposed Research Plan, Fiscal Year 2013-2014

March 21, 2013

Today's Action

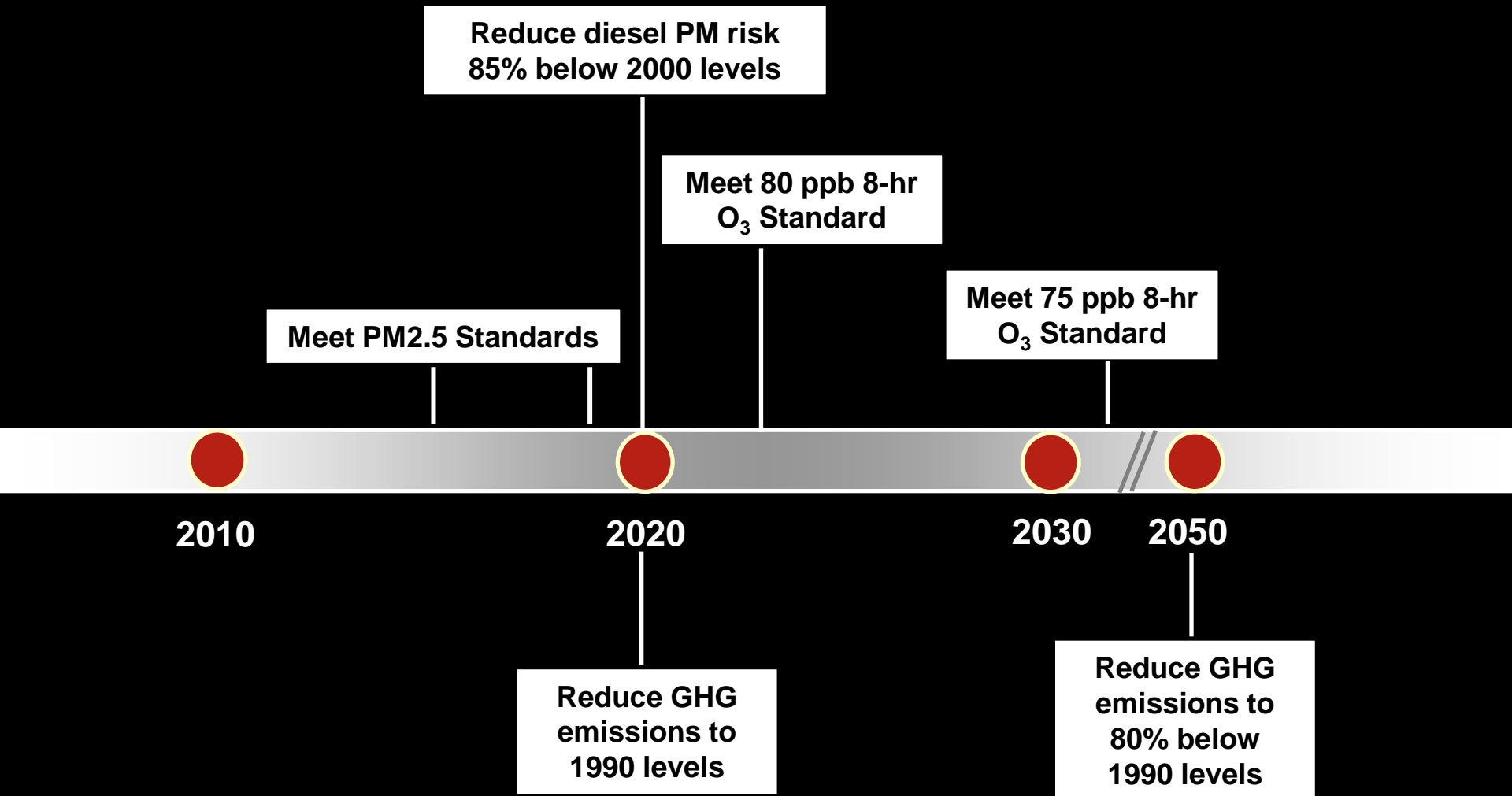
- Approve Fiscal Year 2013-2014 Research Plan
- 10 research concepts
- Total \$4.4 million

Proposed 2013-2014 Funding Allocations



LCFS = Low Carbon Fuel Standard
ACC = Advanced Clean Cars
SIP = State Implementation Plan

Planning Considerations



Developing the Research Plan

- Identified priorities based on ARB program needs
- Developed concepts and scopes of work in-house
- Solicited research proposals from UC/CSU systems
- Coordinated with other agencies who sponsor research to avoid duplication

State Implementation Plan (SIP) Research

Goal:

- Support attainment of air quality standards

Current Research:

- Field studies and improvement of emission inventories and PM_{2.5} chemistry

Research Need:

- Assess air quality impacts of LVP-VOCs in consumer products



Funding: \$600,000 for two projects

Emissions of Low Vapor Pressure-Volatile Organic Compounds (LVP-VOCs)

- Investigate emissions and air quality impacts of LVP-VOCs from consumer products
- Chamber studies will be used to compare air quality impacts of LVP-VOCs and products that contain them
- Results will help ARB assess the air quality impacts of the LVP-VOC exemption in ARB regulations
- Proposed funding: \$400,000

Environmental Fate of Low Vapor Pressure-Volatile Organic Compounds

- Investigate environmental fate and air quality impacts of LVP-VOCs from consumer products
- Environmental fate model will be developed to assess air quality impacts of the use and disposal of LVP-VOCs in consumer products
- Results will help ARB assess the air quality impacts of the LVP-VOC exemption in ARB regulations
- Proposed funding: \$200,000

Health Effects Research

Goal:

- Characterize health impacts of air pollution exposure

Current Research:

- Investigating cardiovascular impacts of PM_{2.5} and ozone exposure

Research Needs:

- Investigate new biological mechanisms and multipollutant impacts



Funding: \$1,185,000 for two projects

Possible Biological Mechanism for Cardiovascular Effects of Air Pollution Exposure

- Examine possible mechanistic pathway for PM_{2.5}- and ozone-induced cardiovascular effects in rats
- Monitor cardiovascular impacts during and after air pollution exposure
- Results will help characterize the health impacts of air pollution exposure
- Proposed funding: \$600,000

Cardiovascular Impacts of Multipollutant Exposure

- Examine cardiovascular effects of co-exposure to ozone and PM_{2.5}
- Expose mice to concentrated air pollution samples from South Coast
- Results will improve understanding of the effects of exposure to multiple pollutants
- Proposed funding: \$585,000

Diesel Research

Goal:

- Characterize real-world diesel emissions

Current Research:

- Evaluating reliability and effectiveness of aftertreatment

Research Need:

- Determine on-road functionality of selective catalytic reduction (SCR)

Funding: \$400,000 for one project



Activity Data from On-road Heavy Duty Diesel Vehicles

- Evaluate on-road effectiveness of SCR for reducing emissions
- Determine how much of the time SCR is functional by evaluating how trucks are used
- Results will inform possible improvements to emissions certification and compliance testing and improve emissions forecasts
- Proposed funding: \$400,000

Advanced Clean Cars Research

Goal:

- Support zero emission vehicle (ZEV) program implementation

Current Research:

- Examining consumer response to ZEVs, how ZEVs are used, compliance strategies, and PM measurement

Research Need:

- Investigate factors that affect consumer ZEV purchase behavior

Funding: \$265,000 for one project



Examining Factors that Influence ZEV Sales in California

- Comprehensively characterize ZEV buyers in California to improve understanding of ZEV market
- Evaluate socioeconomic and geographic characteristics of ZEV buyers over time
- Results will help understand ZEV market
- Proposed funding: \$265,000

Low Carbon Fuel Standard (LCFS) Research

Goal:

- Support LCFS implementation

Current Research:

- Investigating impacts, development, and demonstration of various fuels and facilities

Research Needs:

- Examine availability and environmental impacts of renewable natural gas and drop-in fuels



Funding: \$725,000 for two projects

Renewable Natural Gas (RNG) as a Low-Carbon Substitute

- Examine feasibility, costs, and environmental impacts of producing and distributing RNG as a transportation fuel
- Results will provide insights into economic and environmental potential of large-scale production and use of RNG
- Proposed funding: \$325,000



The Future of Drop-In Liquid Fuels

- Analyze technology, feasibility costs, and environmental impacts of drop-in fuels
- Results will help assess potential for production and use of drop-in fuels
- Proposed funding: \$400,000



Sustainable Communities Research

Goal:

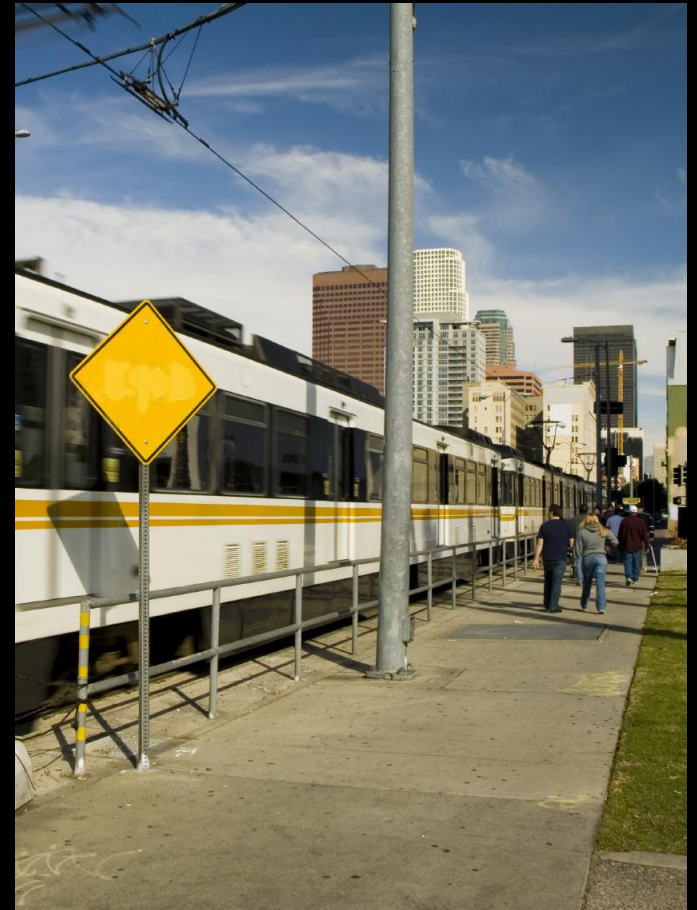
- Support implementation of sustainable and healthy communities

Current Research:

- Investigating vehicle miles traveled (VMT), greenhouse gas emission reductions, and air pollution exposure

Research Needs:

- Explore unintended consequences and exposure mitigation strategies



Funding: \$1,195,000 for two projects

Social Equity in Sustainable Communities

- Assess potential for displacement of low-income residents near transit-oriented development
- Provide tools for MPOs to evaluate potential displacement and possible solutions
- Results will help ensure that low-income communities share in the benefits of transit-oriented development
- Proposed funding: \$695,000

Sound Wall-Vegetation Barriers for Pollution Exposure Mitigation

- Evaluate the variability and effectiveness of sound wall-vegetation barriers
- Results will help inform guidance for local governments and planning agencies to mitigate air pollution exposure
- Proposed funding: \$500,000



Leveraging and Partnerships

- Advanced Clean Cars
 - U.S. EPA, U.S. DOE, NHTSA, State agencies
- Low Carbon Fuel Standard
 - CEC, U.S. EPA
- Sustainable Communities
 - SCAG, MTC/ABAG, Caltrans
- Greenhouse Gases and Air Quality
 - Los Angeles Megacities (NIST)
 - DISCOVER-AQ (NASA)
 - AQUEST (NASA)

Recommended Board Action

Approve Fiscal Year 2013-2014
Research Plan

